

## **TITLE OF THE INVENTION : VISOR PROTECTOR**

### **CROSS-REFERENCE DATA**

The present patent application is a continuation-in-part of a co-pending patent application No. 10/068,976 filed on February 11, 2002 (and allowed on February 10, 5 2003), which is a continuation-in-part of patent application No. 09/833,714 filed on April 13, 2001 (and now abandoned).

### **FIELD OF THE INVENTION**

The present invention relates to visor protectors and more specifically to a protector that prevents a visor of a helmet from being scratched, in particular when the 10 latter is not being used.

### **BACKGROUND OF THE INVENTION**

It is common for hockey players to be required to wear protectors such as helmets including a transparent visor and it is quite unpleasant to play with a helmet which visor has been scratched. Usually, a player carries his helmet inside his sport bag along with 15 multiple other pieces of equipment that could eventually damage the visor, it would therefore be advisable for the player to be able to protect his visor against possible wears. For that reason a user may be forced to buy a new visor that is quite expensive. Therefore preventing these visors from being scratched is very important. The same situation is applicable to different helmets of the type used, for example, by cyclists or by 20 snowmobile drivers and the like cap visors.

## SUMMARY OF THE INVENTION

The present invention relates to a visor protector for releasable attachment to a visor mounted on a helmet, the visor being of the type defining opposite first and second visor surfaces, said visor protector comprising :

- 5    – a generally elongated and cross-sectionally V-shaped protective member comprising :
  - a web,
  - a first sheet-like protective shell for substantially entirely overlying the visor first surface, said first protective shell defining a main edge integrally attached to said web and a first shell area, and
- 10    – a second sheet-like protective shell defining a main edge integrally attached to said web and a second shell area, said second shell area being at least a non-negligible fraction of said first shell area, for allowing said second shell to overlie at least a non-negligible portion of the visor second surface;
- a trough-like visor channel formed between said first and second protective shell; and
- 15    – a releasable attachment member, for releasably attaching said protective member to a selected one of the visor and the helmet when the visor is in said visor channel.

In one embodiment, said attachment member comprises at least one resilient clamp carried by said protective member, each said at least one clamp comprising a web portion and parallel first and a second finger portions continuously biased towards each other, said clamp web portion being adjacent to said protective member web, with said clamp first finger portion extending along said first shell and with said clamp second finger portion extending along said second shell, with said first and second protective

shells being movable about said protective member web and with said clamp continuously biasing said first and second protective shells towards each other.

In one embodiment, said protective member is made from a flexible fabric material.

5        In one embodiment, the visor protector further comprises at least one semi-rigid resilient guide carried within said first protective shell, each one of said at least one guide extending from a corresponding one of said at least one clamp along said first protective shell and being destined to continuously bias said first protective shell towards the visor external surface.

10      In one embodiment, said attachment member comprises at least one hook-and-loop type fastener attached to said protective member for releasably attaching said protective member to the visor.

15      In one embodiment, said first protective shell is connected to said second protective shell by means of a seam longitudinally oriented along said protective member web, said first and said second protective shells being stitched together by said seam.

#### DESCRIPTION OF THE DRAWINGS

Figure 1 is a side view of an embodiment of a visor protector according to the present invention overlaid on the visor of a helmet;

20      Figure 1a is a view similar to Fig. 1, showing the protector attaching means secured to another possible attaching location on the helmet;

Figure 2 is a view similar to Fig. 1, showing the protector attaching means including a third elongated strap;

Figure 2a is a view similar to Fig. 2 showing the third strap in another possible attaching location on the helmet;

Figure 3 is a front view of another embodiment of a visor protector according to the present invention overlaid on the visor having a lower wire shield section integrated  
5 therewith;

Figure 4 is a section view taken along line 4-4 of Fig. 3;

Figure 4a is a section view taken along line 4a-4a of Fig. 3a;

Figure 5 is a view similar to Fig. 1, showing the protector attaching means including an extension strap;

10 Figure 6 is a back view of another embodiment of a visor protector according to the present invention, illustrating a protective member having protective external and internal shells;

Figure 6a is a section view taken along line 6a-6a of Fig. 6;

15 Figure 6b, 6c, 6d, 6e, 6f, 6g and 6h are section views similar to Fig. 6a, showing different embodiments of the shell connection means;

Figure 7 is a broken view of the extension strap of Fig. 2;

Figure 7a is an exploded side view of a different snap device;

Figure 8 is a back view similar to Fig. 6, showing the addition of a third elongated strap;

20 Figure 9 is an exploded back view similar to Fig. 8, showing the embodiment of Fig. 3 with the protective internal shell detachable from the protective external shell;

Figure 10a is a front perspective view of a visor protector according to another embodiment of the present invention operatively installed on a visor;

Figure 10b is a rear perspective view of the visor protector of figure 10a;

Figure 10c is a sectional view taken along line 10c-10c of figure 10b, with an arrow suggesting the movement of a foldable part of a hook-and-loop type fastener;

Figure 11a is a front perspective view of a visor protector according to yet another embodiment of the present invention operatively installed on a visor;

Figure 11b is a side perspective view of the visor protector of figure 11a, the outer layer of the external protective shell being partially broken for showing the inside content of the external protective shell; and

Figure 11c is sectional view taken along line 11c-11c of the figure 11b.

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#### DETAILED DESCRIPTION OF THE EMBODIMENTS

With reference to the annexed drawings, the preferred embodiments of the present invention will be herein described for indicative purposes and by no means as of limitation.

Referring to Fig. 1, there is shown an embodiment 10 of a visor protector  
15 according to the present invention for preventing a visor 20 attached to a helmet 30 from being scratched when unused.

The visor 20 defines a visor external surface 21 and an opposed visor internal surface 22, generally facing outwardly and inwardly relative to the helmet 30, respectively. The visor external 21 and internal 22 surfaces define a common visor main  
20 edge 23, generally free, and a generally opposed common visor attaching edge 24. The latter attaches to the helmet 30.

The visor protector 10 includes a generally elongated protective member 40 that includes a protective external shell 50, preferably flexible, configured and sized to substantially entirely overlie the visor external surface 21. The protective external shell 50 defines an external shell main edge 51, a generally opposed external shell auxiliary edge 52 and a pair of generally opposed external shell longitudinal side edges 53, 54 adjacent the external shell main edge 51.

The visor protector 10 also includes a protector attaching means 70 to releasably attach the protective member 40 to the helmet 30 when the protective external shell 50 overlies the visor external surface 21. The protector attaching means 70 is configured and 10 sized to bias the protective external shell 50 in pressurizing configuration against the visor external surface 21, as illustrated by arrows A.

The protector attaching means 70 can include a pair of elongated stretchable straps 72, each defining a strap first end 73 and a generally opposed strap second end 74. The strap first ends 73 attach to the protective external shell 50 preferably adjacent a 15 respective external shell side edge 53, 54. The strap second ends 74 releasably attach to the helmet 30. The stretchable straps 72 bias the protective external shell 50 in the pressurizing configuration against the visor external surface 21 when in stretched configuration.

Protector attaching means 70 includes a fastener 90 slidably mounted on each 20 strap 70 adjacent the strap second ends 74 to attach to the helmet 30. Each fastener 90 includes a base 91 with a snap 92 located thereon, as better illustrated in Fig. 4. The base 91 of the fastener 90 allows adjustment of the position of the fastener 90 along the strap 72. The fastener snap 92 is adapted to releasably interconnect with complementary snap

devices 96 secured to the helmet 30. Although the snap devices 96 are part of the protector attachment means 70, they are usually found already installed in place as parts of the helmets 30 such as helmets for hockey.

Each snap device 96, as illustrated in Figs. 4 and 7a, can include a button 97 for  
5 complementary engagement with the fastener snap 92 and a stud 98 for securing the  
button 97 to the helmet 30.

Especially for cases where no snap devices 96 are present on the helmet 30, the  
protector attaching means 70 further includes an extension stretchable strap 75, as shown  
in Figs. 5 and 7. The extension stretchable strap 75 defines two opposed strap free ends  
10 76, each having a snap device 96 slidably mounted thereon adjacent a respective strap  
free end 76. Accordingly, each extension strap free end 76 attaches to a respective second  
end 74 of the pair of straps 72 so as to releasably embrace the helmet 30 to bias the  
protective external shell 50 in the pressurizing configuration against the visor external  
surface 21 when in stretched configuration.

15 Usually, the different types of helmets 30 comprise a plurality of vent openings 34  
located thereon. As illustrated in Figs. 2 and 3, the fastener 90 could also be a hook 92a  
adapted to anchor to a respective vent opening 34.

The fastener 90 could also be a first part of a hook-and-loop type fastener (not  
shown) for attaching to a complementary second part of the hook-and-loop type fastener  
20 (not shown) secured to the helmet 30.

In most helmets 30 known in the art, visor main edge 21 is a free edge.

Protective member 40 of a second embodiment 10a of a visor protector according  
to the present invention shown in Fig. 6 further includes a flexible protective internal

shell 60, for at least partially covering the visor internal surface 22 as partially illustrated in Fig. 4a. The protective internal shell 60 defines an internal shell main edge 61 longitudinally extending adjacent the external shell main edge 51, a generally opposed internal shell auxiliary edge 62 and a pair of generally opposed internal shell longitudinal side edges 63, 64, adjacent the internal shell main edge 61.

The protective member 40 also includes a shell connecting means 80 for connecting the internal shell main edge 51 to the external shell main edge 61 so as to form a transversal V-shaped cross-section 42 of the protective member 40 adapted to receive the visor free edge 23 therein when the protective external shell 50 overlies the visor external surface 21.

As illustrated in Figs. 6 and 6a, the protective internal shell 60 integrally extends from the protective external shell 50 and longitudinally folds over along a fold line 44, as part of the shell connecting means 80. The fold line 44 essentially forms both internal shell main edge 61 and external shell main edge 51. The shell connecting means preferably includes a stitch line 82 extending along the fold line 44 to reinforce the latter and to ensure that the protective member 40 keeps its transversal V-shaped cross-section 42.

As shown in Fig. 8, the internal shell side edges 63, 64 at least partially and longitudinally extend adjacent the external shell side edges 53, 54 and partially connect hereto. The shell connecting means 80 further includes two side stitch lines 83, 84 oriented along the internal 60 shells to each other.

Figs. 6a through 6h show alternate shell connecting means 80 used to obtain the transversal V-shaped cross section 42. With semi-rigid type material used for both the

protective external 40 and internal 60 shells, the protective member 40 could be simply pre-shaped as illustrated in Figs. 6b and 6g. Only stitches 82, 83, 84 could be considered to connect the two protective external 40 and internal 60 shells together, as shown in Figs. 6d and 6h. As illustrated in Figs. 6c and 6e, a reinforcing elongated connecting 5 piece 86 could also be used at the external 51 and internal 61 shell main edges.

For the embodiment depicted in Figs. 6f and 9, due to a lower wire shield section 25 integrated to the visor 20 and extending from its main edge 23 as shown in Fig. 3, the protective external 50 and internal 60 shells are releasably connected to each other to ease the installation of the protector 10 on the visor 20. Accordingly, the shell connecting 10 means 80 includes complementary parts 88a, 88b of a hook-and-loop type fastener 88 or the like secured to the respective protective external 50 and internal 60 shells.

As shown in Figs 2, 2a, 3, 4a, 8 and 9, the protector attaching means 70 further includes a third elongated stretchable strap 77. The third stretchable strap 77 defines a third strap first end 78 and a generally opposed third strap second end 79. The third strap 15 first end 78 attaches to the protective external shell 50 adjacent the external shell auxiliary edge 52, and the third strap second end 79 releasably attaches to the helmet 30. The third stretchable strap 77 biases the protective external shell 50 in pressurizing configuration against the visor external surface 21 and the visor free edge 23 inside the transversal V-shaped cross-section 42 of the protective member 40 when it is in stretched 20 configuration.

Similarly to the pair of straps 72, the third strap 77 includes a fastener 90 slidably mounted thereon adjacent the third strap second end 79 for attachment to the helmet 30.

Referring to Fig. 2a, the fastener 90 is a hook 92a adapted for anchoring to a rear edge 35 of the helmet 30.

In another embodiment illustrated in Fig. 6g, the protective internal 60 and external 50 shells are made out of a resilient rigid type material such as thermo-plastics or  
5 the like.

Accordingly, the protective internal shell 60 defines a concave portion 66 longitudinally extending adjacent the internal shell auxiliary edge 62. The apex region 67 of the concave portion 66 substantially resiliently abuts against the protective external shell 50 adjacent the external shell auxiliary edge 52 so as to form a receiving mouth 68 10 of the transversal V-shaped cross-section 42 for receiving the visor free edge 23 therein. The fold line 44 essentially forms a hinge type connecting means 80 to enable the protective member 40 to resiliently clamp on the visor 20 with the concave portion 66 of the protective internal shell 60 resiliently abutting against the visor internal surface 22.

The protective external 50 and internal 60 shells respectively define an external 15 55 and an internal 65 shell inner surface for facing the visor external 21 and internal 22 surfaces, respectively. The external 55 and internal 65 shell inner surfaces are preferably covered with a felt type material 49 as illustrated in Fig. 6h to minimize scratches on the visor external 21 and internal 22 surfaces, when the protective member 40 is in place protecting the visor 20.

20 For the embodiment 10 with only the protective external shell 50, the external shell inner surface 55 preferably provides for a frictional contact with the visor external surface 21 to prevent sliding off the protective member 40 therefrom, such as provided by rubber or leather type materials.

The visor protector 10 of the present invention can be made out of different types of leather or the like cloth type materials, such as transparent or translucent materials.

The straps 72, 75 and 77 can be made out of an elastic type material.

In use, the visor protector 10 is placed over the visor 20 so as to cover the same  
5 within the protective member 40 that specifically covers the visor external surface 21 with its protective external shell 50 and the visor internal surface 22 with its protective internal shell 60. The protector attaching means 70 is attached to the helmet 30 with the visor 20 being in its closed (or in-use) position. In that position, it is substantially impossible for the visor protector 10 to fall off from the visor 20, thus protecting the  
10 latter from being scratched by any object that can potentially get in contact with the helmet 30. Decorations or advertising may be readily applied to the protector 10, if required.

In figures 10a–10c and 11a–11c, there is shown a visor 20 as defined  
15 hereinabove, meant to be installed on a helmet (not shown in figures 10a–11c). As set forth in the above specifications, visor 20 comprises external and internal visor surfaces 21 and 22 respectively, a visor free main edge 23 and a visor attaching edge 24. Moreover, visor 20 comprises an arcuate rod 26 spacedly extending over attaching edge 24 between the two visor attaching edge 24 end portions to which the rod extremities are  
20 integrally fixed. Rod 26 is further attached to visor 20 by means of a number of ribs 27, spaced-apart along rod 26 and integrally linking rod 26 to visor attaching edge 23. The relative arrangement of rod 26, visor attaching edge 24 and ribs 27 forms a number of

openings 28. Attachment means (not shown) allow visor 20 to be attached to a helmet, as shown in figure 1 for example.

In an alternate embodiment of the present invention depicted in figures 10a–10c,  
5 wherein primed reference numerals refer to similar elements in the previous  
embodiments of figures 1–9, visor protector 10' comprises a protective member 40' which  
can be made out of a flexible fabric material for example, with external and internal  
sheet-like shells 50' and 60' respectively. External shell 50' defines a shell inner surface  
55', a main edge 51' and an auxiliary edge 52' located opposite main edge 51'; internal  
10 shell 60' defines a shell inner surface 65', a main edge 61' and an auxiliary edge 62'  
located opposite main edge 61'. Shells 50', 60' are attached together at the vicinity of their  
main edges 51' and 61'. Protective member 40' thus forms a V-shaped cross section,  
defining a web 106' formed at the vicinity of the attachment between shells 51', 61', and a  
trough-like channel 105'. Visor protector 20' further comprises an attachment member 70'  
15 that comprises two spaced-apart hook-and-loop type fasteners 101'. A first part 103' of  
each hook-and-loop type fastener 101' is attached on the surface of external shell 50'  
opposite external shell inner surface 55', at the vicinity of auxiliary edge 52' thereof; a  
second part 102' of each fastener 101' is attached to an elongated strap 104', with strap  
104' being attached to the inner surface of internal shell 60' at the vicinity of the auxiliary  
20 edge 62' thereof.

Accordingly, visor protector 10' can be releasably installed on a visor 20. To achieve this installation, visor 20 is inserted in channel 105' and slid between shells 50', 60' until visor main edge 23 abuts against web 106', in order for external shell 50' to be

juxtaposed with visor external surface 21, and in order for internal shell 60' to be juxtaposed with visor internal surface 22. Thereafter, strap 104' of each hook-and-loop type fastener 101' is extended through a registering opening 28 of visor 20. If visor 20 is not provided with such openings 28, strap 102' is extended through the gap formed 5 between visor attaching edge 24 and the frontal edge of the helmet on which it is installed. Then, strap 104' is folded back and applied on part 103' of attaching member 70' as suggested by the double-sided arrow of figure 10c, in order for first and second parts 102' and 103' of the hook-and-loop type fastener to be releasably bound together. Thereby, protector 10 is releasably secured to visor 10.

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In yet another embodiment of the invention illustrated in figures 11a–11c, wherein double-primed reference numerals refer to similar elements in the previous embodiments of figures 10a–10c, external and internal shells 50" and 60" define an outer layer 50a", 60a" and an inner layer 50b", 60b" respectively. Indeed, protective member 15 40" is composed of two layers stitched together along their respective peripheral edges, and folded along a fold line corresponding to web 106", and are kept in this folded configuration by means of an additional seam applied along this fold line. One of the folded portions thus forms double-layered external shell 50", and the other folded portion forms double-layered internal shell 60". In-between layers 50a", 50b" of shell 50" and 20 layers 60a", 60b" of shell 60", protective member 40" can optionally be filled with padding (not shown) for further protection of visor 20.

In this embodiment of figures 11a–11c, attachment member 70" comprises two clamps 110" made from a resilient material, for example plastic or metal. Each clamp

110" comprises a web 110c", with substantially parallel external and internal fingers 110a" and 110b" extending therefrom that are continuously biased towards each other.

Each clamp 110" is carried within double-layered protective member 40" transversally to web 106" and is arranged therein in order for its web 110c" to be located 5 adjacent protective member web 106", in order for external finger 110a" to be fitted between layers 50a", 50b" of external shell 50" and to extend towards the external shell auxiliary edge 52", and for internal finger 110b" to be fitted between layers 60a", 60b" of internal shell 60" and to extend towards the internal shell auxiliary edge 62".

To ensure that the entire length of the inner surface 55" of external shell 50" 10 remains closely applied on visor external surface 21", two guides 118" are further provided and arranged diagonally within external shell 50", between layers 50a" and 50b". Each guide 118" extends between one of the two intersections between main edge 51" and clamp external portion 110a", and a corresponding intersection between side edge 53" (or 54") and auxiliary edge 52" of shell 50". Guides 118" are made from a semi- 15 rigid resilient material, for example metal or plastic, and can thus continuously bias the side portions of protective member 40" extending outwardly from clamps 110" towards the visor external surface 21.

Hence, visor protector 10" can be releasably installed on visor 20. To achieve this installation, protector 10" is inserted in insertion channel 105" and slid along visor 20 20 until visor main edge 23 abuts against web 106", in order for external shell 50" to be juxtaposed with visor external surface 21, and in order for internal shell 60" to be juxtaposed with visor internal surface 22. During the insertion of visor 20 in-between external and internal shells 50", 51", external and internal clamp portions 110a", 110b" of

both clamps 110" are spread apart against the bias of resilient webs 110c". Thus, clamps 110" will bias shells 50" and 60" towards one another and against the visor external and internal surfaces 21 and 22, respectively. Under the pressurizing biasing action of clamps 110", protective member 40" will be releasably frictionally installed on visor 20.

- 5 Moreover, under the action of guides 118", the protector external shell 50" will be closely applied on the entire length of visor external surface 21, hence preventing the entire visor external surface 21 from being scratched.

The relative dimensioning of shells 50, 60 will now be discussed (this is also valid  
10 for shells 50', 50", 60', 60" of the other embodiments). When a visor-provided helmet is stored in a duffel bag, for example, visor external surface 21 is the portion of the visor that is most exposed to scratch hazards. For example, a hockey skate comprising a sharp blade can permanently damage visor external surface 21. To prevent such scratches, external shell 50 is shaped and sized to substantially entirely overlie visor external  
15 surface 21; a small peripheral portion of visor external surface 21 can remain uncovered by shell 50, as different visor models have different shapes and dimensions, and anodyne shape incompatibilities may occur.

On the other hand, visor internal surface 22 is also exposed to scratch hazards that are however likely to be less frequent and important than those threatening visor external  
20 surface 21. When visor 20 is operatively installed on the helmet, the only way to gain access to the interior of the helmet, and thus to visor internal surface 22, is through the neck opening of the helmet, which can be formed partly by main edge 23 of visor 20 on

some helmets. Hence, the portion of visor internal surface 22 adjacent main edge 23 of visor 20 is more likely to get damaged than the portion adjacent visor attaching edge 24.

Moreover, in some helmet configurations, a portion of the helmet above its frontal edge may underlie a portion of visor 20 adjacent visor attaching edge 24, if visor 20 is  
5 attached to the helmet above the helmet's frontal edge portion. Consequently, this upper portion of visor internal surface 22 which overlies the frontal edge portion of the helmet, may not be covered by internal shell 60 since internal shell 60 would be blocked from passage beyond the helmet frontal edge. In any event, this upper portion of visor internal surface 22 is not comprised within the usable visor viewing area of visor 20, so damage  
10 to this area would not impair the viewing capacity through visor 20.

Thus, in some embodiments, internal shell 60 will not cover the entire internal visor surface 22 due to internal shell designs that are sized to cover only the accessible portion of the visor internal surface 22 or only a portion thereof. The area of internal shell 60 is hence smaller than that of external shell 50 which is intended to cover substantially  
15 entirely the visor external surface 21. However, one important purpose of internal shell 60 is to protect visor internal surface 22, and thus internal shell 60 must be sized to offer a non-insignificant protection against macroscopic objects such as hockey skates that could impact on visor internal surface 22. Internal shell 60 is consequently shaped in order to cover and protect at least a non-negligible portion of visor internal surface 22  
20 and more especially at least a portion thereof adjacent visor main edge 21. Consequently, it can be said that the area of internal shell 60 represents at least a non-negligible fraction of that of external shell 50.

In one embodiment, internal shell 60 is smaller than external shell 50 but still covers the entire accessible portion of visor internal surface 22. In another embodiment, external and internal shells 50, 60 have a same area.

The fact that the area of internal shell 60 represents at least a non-negligible  
5 fraction of that of external shell 50 moreover allows a snug and stable installation of protective member 40 on visor 20. Indeed, when protector 10 is installed on visor 20, protective member 40 covers a significant portion of both external and internal surfaces 21, 22 of visor 20. The engagement of visor 20 into the protective member trough-like channel 105' provides a stable abutment of protective member web 106' against the visor  
10 free main edge 23. This, in combination with the fact that the protective member internal and external shells 50, 60 extend on either sides of visor 20, will help prevent accidental disengagement of protective member 40 from visor 20 when the former is attached to the latter with a suitable attachment member such as an attachment member described in one of the embodiments disclosed herein. Therefore, once protector 10 has been secured to  
15 visor 10 with attachment member 70, unsolicited disengagement of the visor 20 from protector 10 is unlikely.

Although the present visor protector has been described with a certain degree of particularity it is to be understood that the disclosure has been made by way of example  
20 only and that the present invention is not limited to the features of the embodiments described and illustrated herein, but includes all variations and modifications within the scope and spirit of the invention as hereinafter claimed.